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# **Local Survey Relationships to System Calibration and Bias Identification**

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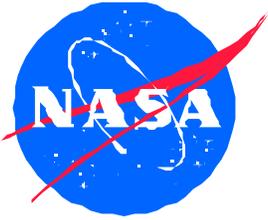
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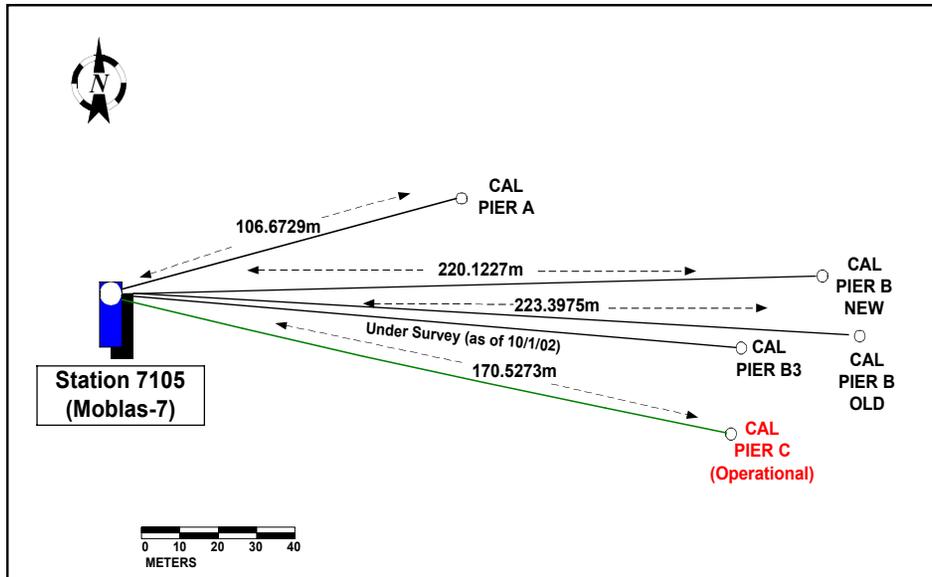
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## PRIMARY THEMES

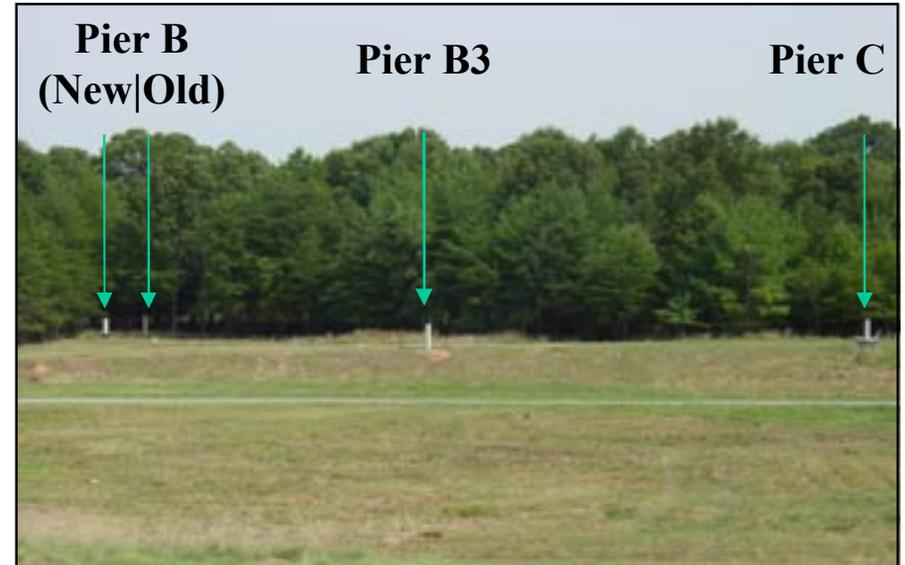
- Why Systems Relying on External Calibration Must Have Accurate Surveyed Target Distances (*Errors in Target Distance Correlate 1:1 in Range Bias*).
- How Ground Testing to Multiple Targets Can Provide Excellent Detection Capabilities of Potential Target / System Movements.
- Provide Historical Examples at Greenbelt, MD. USA where Calibration Piers have been found to shift by  $> 5\text{mm}$ .
- Provide Solutions to Maintain Accurate Target Distances.



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Calibration Pier Network at Greenbelt Maryland, USA



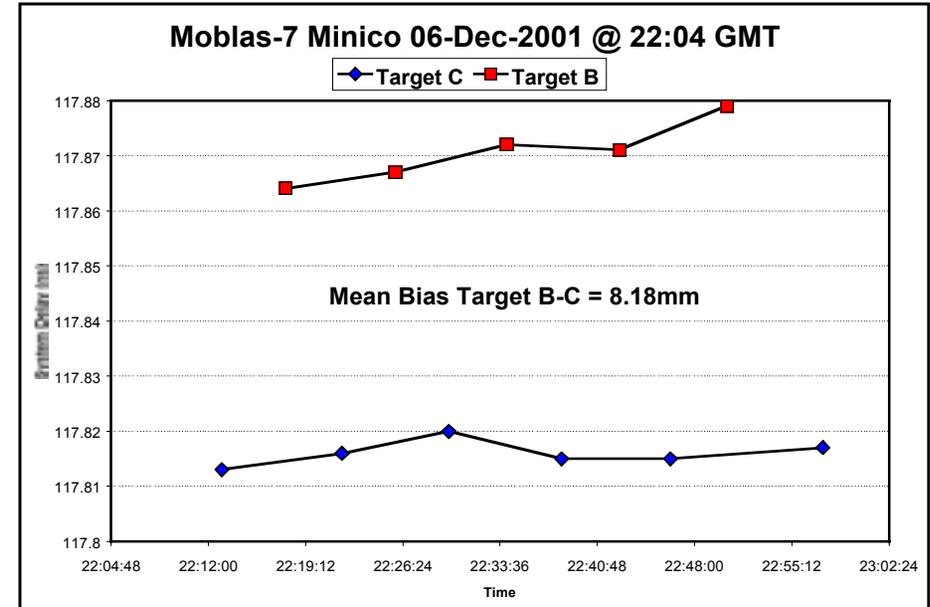
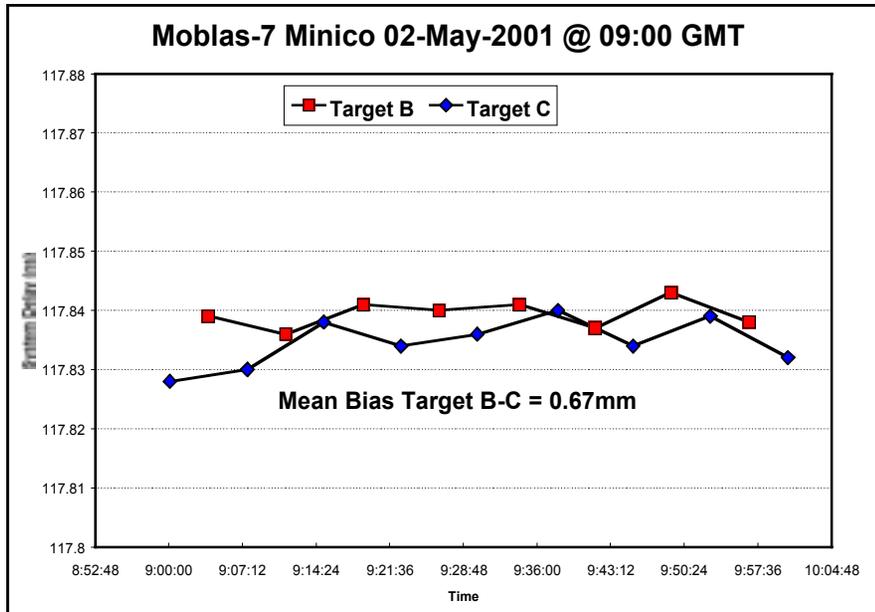
Calibration Targets at Greenbelt viewed from the mount Station 7105.

***Error in Target Distance Will Map 1:1 Into a Range Bias***

***1998 - “Old” Pier B Shifted 5.3mm in range to Station 7105***  
***2001 - “New” Pier B Shifted 8.1mm***



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*Agreements of less than 2mm indicate stability of target.*

*Mean Bias above 4mm between multiple targets indicates potential instability of target distance*

$$\text{System Delay} = \text{Calibration TOF} - \frac{2 * \text{Target Range} * \text{Fn}}{C}$$